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Afrotropical Asilidae (Diptera) 6. The tribe Atomosiini (Laphriinae)

by

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SYNOPSIS

Three genera comprise the tribe Atomosiini in the Afrotropical Region. *Goneccalypsis* Hermann, previously with only two species (1 Oriental, 1 Afrotropical), is added to with the description of a new species, *G. montanus* (Lesotho and South Africa). *Loewinella* Hermann, previously with five species (2 Palaearctic, 3 Afrotropical), is added to with the descriptions of four new species (1 Oriental, 3 Afrotropical), *L. deemingi* (Nigeria), *L. eburacta* (Ivory Coast), *L. flavipes* (Namibia) and *L. lehri* (Pakistan). Descriptive notes and illustrations are given for all the species of *Loewinella* and a key supplied for their separation. A third genus, *Dichaetothyrea* de Meijere, previously known only from a single Oriental species, is recorded for the first time from the Afrotropical Region with the description of a new species, *D. calvifrons* (Madagascar).

INTRODUCTION

Hull (1962) lists no fewer than 39 genera in his world-wide treatment of the tribe Atomosiini. Most of these are Neotropical or Australian, and only two are Afrotropical. Oldroyd (1980) lists a single species of *Goneccalypsis* Hermann and three species of *Loewinella* Hermann as the only representatives of the tribe recorded for the Afrotropical Region. My study of the tribe started with the collection of new material of *Goneccalypsis* during a recent trip to Malaŵi. An examination of this and other material revealed six new species, one of which belonged to the monotypic Oriental genus *Dichaetothyrea*. It appears, therefore, that the Afrotropical Region may be richer in representatives of this tribe than was at first suspected. Members of the Atomosiini are invariably tiny (often less than one centimetre in length) and therefore easily overlooked. Species have now been recorded from a number of countries all over the African continent, and Madagascar, and so I would predict that more species await discovery.

The Atomosiini are a highly distinctive element of the Afrotropical asilid fauna. They are characterised by an alignment of the crossveins at the apex of the discal cell into a cross (Fig. 1); short, usually black, bristles on the metanotal callosities; a pair of tiny forwardly directed bristles on the anterior margin of the mesonotum; a completely chitinised metasternum.

Hull (1962), in his key to the genera of Atomosiini, used the character 'No obvious spine present at the end of the third segment [of the antenna] or on the base of the microsegment' (Couplet 26, p. 371) to separate both *Goneccalypsis* and *Loewinella* from other genera. This is not a good means of characterising these genera as they do in fact possess a small, although not 'obvious', seta in the

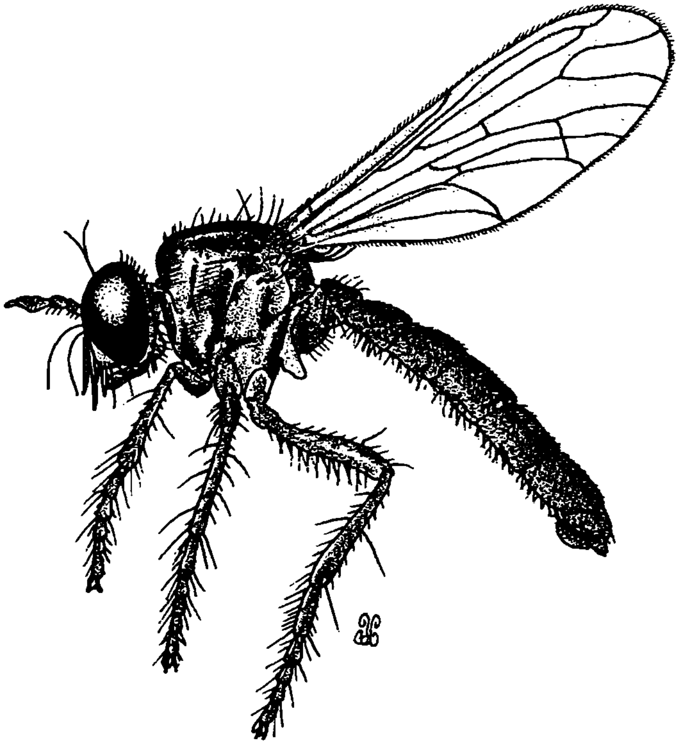


Fig. 1. *Goneccalypsis argenteoviridis* (Hermann), entire male (Malaŵi).

position indicated. As I have not attempted to make a study of all the genera of the tribe, I am not in a position to better Hull's key, but preliminary observations suggest that the presence of a pair of small forwardly directed bristles on the anterior margin of the mesonotum may prove to be a characteristic common only to *Goneccalypsis* and *Loewinella*.

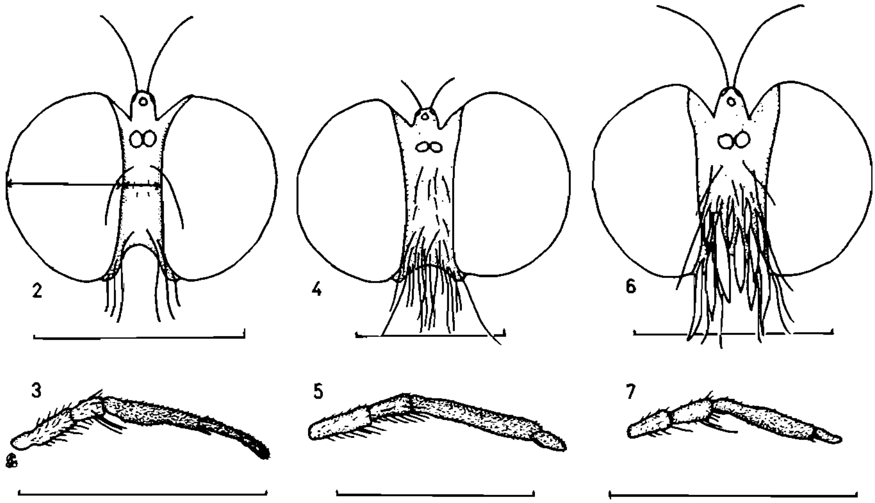
Hull (1962) separated *Goneccalypsis* from *Loewinella* (Couplet 34, p. 371) on the basis of the development of scale-like mystacal bristles and one or two other less significant features in the former genus. Oldroyd (1974) appreciated the fact that these scale-like bristles are present only in males of *Goneccalypsis* and instead laid stress upon differences in the relative length of the first and second antennal segments. This is an imprecise means of separating these genera. My observation is that the first segment of the antenna is definitely not twice the length of the second in *Goneccalypsis* (Fig. 7); and that these two segments are never equal in length, and certainly the second segment is never longer than the first, in *Loewinella* (Fig. 5). Because of the problems associated with the previously published keys and the discovery of another Afrotropical genus, I here present a new key to these genera.

Key to the genera of Afrotropical Atomosiini

1 Fourth antennal segment (microsegment) longer than first (Fig. 3); occipital bristles poorly developed .... **Dichaetothyrea** de Meijere
– Fourth antennal segment shorter than first (Figs 5 & 7); occipital bristles well developed 2
2 Ratio of width of one eye (in anterior view) : width of frons > 1,5 (Fig. 4); mesonotum punctate; mystax of both sexes lacking dorsoventrally flattened, 'scale-like' bristles .... **Loewinella** Hermann
– Ratio of width of one eye : width of frons < 1,5 (Fig. 6); mesonotum shiny with at most a few shallow punctations; mystax of males with dorsoventrally flattened, shiny bristles .... **Goneccalypsis** Hermann

MATERIALS AND METHODS

Only dry, pinned specimens were studied. Genitalia were dissected from males, cleared in warm potassium hydroxide, and drawn with the aid of a camera lucida. The ratio of eye : frons width is important in separating *Goneccalypsis* from *Loewinella*. The measurements required to calculate this ratio were taken in the positions indicated with arrows in Fig. 2. Thorax length was measured mid-dorsally, from the anterior margin of the mesonotum to the hind margin of the scutellum. Wing length was measured from the humeral crossvein to the wing tip. The use of the words silver and gold, when referring to pruinescence, relates to the shiny, reflective nature of these very small setae. In most instances it is not possible to say what colour the setae are, but it is assumed that yellowish setae are responsible for a golden appearance, while white setae appear silvery. All scale lines are 1 mm in length.



Figs 2–7. 2–3. *Dichaetothyrea calvifrons* sp. n. 2. Head. 3. Dorsal aspect of right antenna. 4–5. *Loewinella nigripes* Engel. 4. Head. 5. Dorsal aspect of right antenna. 6–7. *Goneccalypsis argenteoviridis* (Hermann). 6. Head. 7. Dorsal aspect of right antenna.

Abbreviations used in this paper are:
AM — American Museum of Natural History, New York.
BM — British Museum (Natural History), London.
DMAG — Durban Museum and Art Gallery, Durban.
NM — Natal Museum, Pietermaritzburg.
PM — Muséum National D'histoire Naturelle, Paris.
SAM — South African Museum, Cape Town.

The seasonal incidence of Afrotropical species is summarised in Table 1.

TABLE 1
Summary of seasonal incidence of the Afrotropical Atomosiini.

Species	Months of the year											
	J	F	M	A	M	J	J	A	S	O	N	D
Dichaetothyrea calvifrons	●			●								
Goneccalypsis argenteoviridis											●	●
G. montanus	●	●										●
Loewinella aphaea								●				
L. arcuata	●	●	●	●	●		●	●			●	
L. deemingi						●	●					
L. eburacta						●	●					
L. flavipes		●	●									
L. nigripes	●	●	●									●

TAXONOMY

Dichaetothyra de Meijere, 1914

Dichaetothyrea de Meijere, 1914: 58. Genotype: *Atomosia punctulosa* de Meijere, 1911, by original designation.

The genotype, *D. punctulosa* de Meijere, is well described and illustrated by Hull (1962).

There are four female Madagascan specimens available to me, which key to this genus (using Hull's key). The form of the head, and particularly the antennae (well illustrated by Hull), strongly suggest that these specimens should be assigned to this genus. Following this assignment *Dichaetothyrea* acquires an Oriental-Afrotropical distribution similar to that of *Goneccalypsis*.

Dichaetothyrea calvifrons sp. n. Figs 2–3

Derivation: L. Calvatus = made bare, bald; frons = area of head below antennae. Refers to the shiny (lacking pruinescence) frons of this species.

Description: Based on ♀ holotype but supplemented with information taken from paratypes.

Head (Fig. 2): Antenna (Fig. 3) dark red-brown; relative lengths of segments—3 > 4 > 1 > 2; segments one and two with fine black setae, segment three fine gold pruinose and lacking setae except for a single dorsodistal seta at base of microsegment. Segment four (microsegment) almost as long as segments one and two combined; covered with tiny setae. Frons narrow (width of one eye : width of frons ratio = 3,0); upper two-thirds shiny dark red-brown and lacking pruinescence except along eye margins, lower third shiny silver pruinose. Mystax: Two long red-brown downcurved setae arise from centre of shiny upper region of frons; a few (about 10) longish red-brown setae along epistomal margin. Vertex dark red-brown; gold pruinose around, and anterior to, ocellarium; a silver pruinose spot behind ocellarium. Occiput shiny dark red-brown to black and equipped with fine setae (there are no stout black bristles as in other Afrotropical members of the tribe). Rostrum short, proximal half orange-brown, distal half dark brown.

Thorax: Length 1,2 mm. Mesonotum shiny dark red-brown, apunctate; pruinescence limited to two small patches situated anterolaterally and a narrow strip between mesonotum and scutellum. Dorsal bristles; 1 presutural, 1 supra-alar, 1 postalar, all fine black. Scutellum with fine black marginal setae two of which are better developed than the others. Pleura: silver-gold pruinose except for a large bare, shiny mesopleural patch. Mesepimeral setae long, thin, pale yellow (about seven in number). Hypopleural setae poorly developed, sparse (about three in number). Metanotum silver-gold pruinose; a pair of stout, black bristles and a group of fine, shiny setae situated on each callosity. Legs: uniform pale yellow-brown (including coxae) but hind tibiae and tarsi somewhat darker brown; setae and bristles long, shiny, yellow or brown. Wings: length 4,5 mm.

Abdomen: Terga dark red-brown to black, shiny, punctate, covered with fine shiny setae. Sterna similar to terga but pale brown in colour.

Paratypes: 3 ♀, similar to holotype. Male unknown.

Material examined: MADAGASCAR: 3 ♀, holotype (PM) and paratypes (NM), Madagascar Centre, Ambohitantely, dct Ankazobe, 1 600 m, 6.i.1958, B. Stuckenberg (NM Type No. 2546). 1 ♀ paratype, Andranotobaka, 1 400 m, Ambatolampy, iv.1957, P. Griv, (PM). The holotype and one paratype each bear a label with the following inscription: 'N. genus near *Gonnecalypsis* [sic] Herm. det. H. Oldroyd, 1961.'

Remarks: Oldroyd was possibly correct in thinking that these specimens belong to an as yet undescribed genus. For the present I believe it shares so much in common with *Dichaetothyrea* that the species should be placed in this genus until further material is available and more detailed comparisons can be made. Although it is usually inadvisable to describe new species on female specimens alone, I have decided to make an exception in this case as this species is so interesting, and as it seems unlikely that further material will be acquired within the foreseeable future. Hopefully, the undiscovered males will show little departure in form from the females described above.

Key to the species of *Dichaetothyrea*

1 Frons uniformly pruinose; fourth antennal segment shorter than first (Oriental) .... **puctulosa** de Meijere

– Frons with basal one-third silver pruinose, upper two-thirds bare and shiny; fourth antennal segment longer than first (Afrotropical—Madagascar) ...... **calvifrons** sp. n.

Goneccalypsis Hermann, 1912

Goneccalypsis Hermann, 1912: 108. Genotype: *Atomosia argenteoviridis* Hermann, 1907, by original designation.

Hull (1962) separates *Goneccalypsis* from *Loewinella* mainly on the presence of facial scales in the former species. Provided one uses males this character is acceptable, but as female *Goneccalypsis* may lack these dorsoventrally flattened, scale-like setae their importance in identifying the genera is somewhat restricted. The wider frons of both male and female *Goneccalypsis* is probably a better means of identifying members of this genus.

Two species of *Goneccalypsis* were known at the outset of my work. The first of these, *G. argenteoviridis* Hermann, was originally placed in the genus *Atomosia*. Hermann (1912) subsequently described the second species, *G. lucida*, from the Oriental Region, and decided that the two species were worthy of their own genus. During my study I found another species from Africa. The following key may be used to identify the two Afrotropical species.

Key to species of Afrotropical *Goneccalypsis*

1 Pruinescence of frons silvery, mystax of male with silvery scale-like bristles; ♂ genitalia as Figs 8–9, distal prongs of aedeagus small and straight (South Africa, Malaŵi) .... **argenteoviridis** (Hermann)

– Pruinescence of frons golden, mystax of male with golden scale-like bristles; ♂ genitalia as Figs 10–11, distal prongs of aedeagus large and sinuous (Lesotho, South Africa) .... **montanus** sp. n.

Goneccalypsis argenteoviridis (Hermann, 1907) Figs 1, 6–9

Atomosia argenteoviridis Hermann, 1907: 68–9

Goneccalypsis argenteoviridis; Hermann, 1912: 108; Hull, 1962: 404–5; Oldroyd, 1974: 131; Oldroyd, 1980: 348.

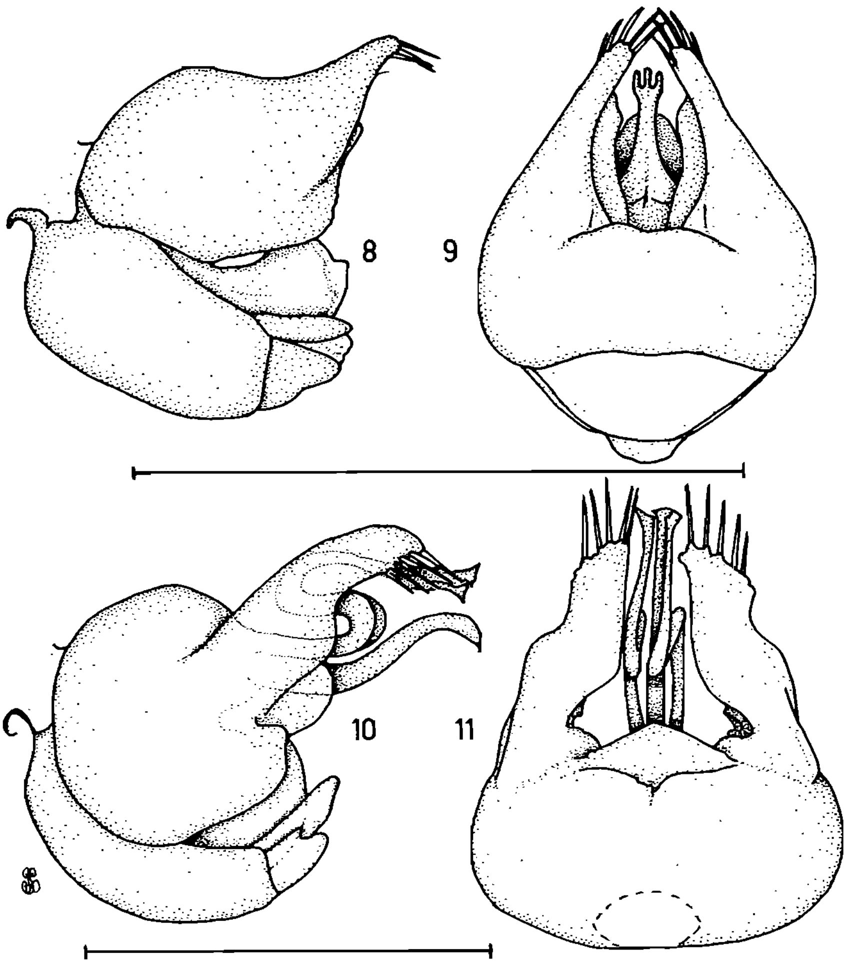
Redescription: Based primarily on the newly collected Malaŵi material.

Head (Fig. 6): Antenna (Fig. 7) black; relative lengths of segments —3 > 1 > 2 > 4; segments one and two with fine black setae, segment three fine gold pruinose and lacking setae except for a single black dorsodistal seta at the base of the microsegment. Microsegment (segment four) short, cone-shaped and lacking setae. Frons fairly broad (width of one eye : width of frons ratio = 1,3) silver pruinose. Mystax of male composed of long dorsoventrally flattened shiny silver-white scale-like bristles occupying lower half of frons (female has fine black bristles and silver-white setae only), upper half with 2 long, downcurved black setae and a few short, fine, silvery setae of normal type. Vertex black with silver-gold pruinescence; a bright, shiny, silver pruinose patch immediately behind ocellarium; 2 long, black, ocellar setae. Occiput shiny black with silver pruinose areas adjacent to eye margins; a row of 7 or 8 short black bristles behind each eye. Rostrum short and black.

Thorax: Length 1,4 mm. Mesonotum shiny blue-black, not punctate; fine, golden setae antero-laterally. Dorsal bristles: fine black acrostichals present, 2 presuturals, 1 supra-alar, 1 postalar, all fine black. Scutellum shiny blue-black with 4 strong black marginal bristles and a number of shorter thinner black setae.

Pleura: silver pruinose except for a shiny, bare vertical band occupying part of the mesopleuron and sternopleuron. Mesepimeral setae long, thin, pale yellow. Hypopleural setae poorly developed, sparse. Metanotum silver pruinose with a group of 3 or 4 stout, black bristles on each callosity. Legs: uniform black (Pietermaritzburg ♂ has yellow and black legs); setae white or black, bristles black. Wings: length 3,5 mm; venation unremarkable (Fig. 1).

Abdomen: Terga black, shiny, finely punctate, covered with fine shiny setae. Sterna black, shiny, not punctate. ♂ genitalia as Figs 8–9 (Pietermaritzburg ♂ illustrated).



Figs 8–11. *Goneccalypsis* species, male genitalia. 8–9. *G. argenteoviridis* (Hermann) (Pietermaritzburg). 8. Lateral. 9. Dorsal. 10–11. *G. montanus* sp. n. (Holotype—Naudesnek, South Africa). 10. Lateral. 11. Dorsal.

Material examined: SOUTH AFRICA: *Natal:* 1 ♂ Pietermaritzburg, Scottsville, 6.xii.1971, M. E. Irwin (NM). MALAŴI: 6 ♂ 7 ♀, Zomba Plateau, Chingwe's Hole, 1 900 m, 24–27.xi.1980, Londt & Stuckenberg, montane grassland (NM, BM, AM); 1 ♂ 3 ♀, same locality, 14.xii.1980, Stuckenberg & Londt (NM); 1 ♀, Mulanje Mnt., Likabula River Valley, 28–30.xi.1980, 1 000 m, Stuckenberg & Londt, riverine *Brachystegia* woodland (NM).

Habitat: This species was abundant in open grassveld situations on the Zomba Plateau. Individuals were difficult to see and were usually collected by randomly sweeping the grass. Copulating pairs were collected. No prey records are available.

Remarks: I have not seen Hermann's type material from Lichtenberg (Transvaal) but, after studying his description, I believe that the newly captured material from Malaŵi and the male recorded by Oldroyd (1974) from Pietermaritzburg are conspecific. Hermann (1907) makes no mention of the flat scale-like mystacal setae considered by both Hull and Oldroyd to be an important generic characteristic. Hull (1962) mentioned this feature and so I assume that he had established that *argenteoviridis* (genotype) possesses this mystacal form. Hermann (1907) states clearly that the mystax is white and so, for the present, I consider the material listed above as representing *argenteoviridis*.

Goneccalypsis montanus sp. n. Figs 10–11

Derivation: L. *Montanus* = of a mountain. Refers to the mountainous localities at which this species has been captured.

Description: Based on ♂ holotype but supplemented with information taken from paratypes.

Head: Antenna black; relative lengths of segments—3 > 1 > 2 > 4; segment two only slightly shorter than segment one; segment four tiny (about half of segment two), cone-shaped. Segments one and two with shiny setae which are either black or white; segment three lacking setae except for a single, dorsodistal, white seta (at base of segment four). Frons fairly wide (eye : frons width ratio = 1,4); entirely yellow-gold pruinose. Mystacal setae largely confined to lower half of frons where many setae are dorsoventrally flattened and shiny yellow-gold in colour. There is a pair of well-developed, long, thin bristles halfway between antennal bases and mystax; these may be black or yellow (often one of each). Vertex silver-gold pruinose except behind ocellarium where it is silver pruinose. Occiput fairly uniformly silver pruinose with 8 or 9 short black setae dorsally behind each eye. Rostrum short, dark red-brown.

Thorax: Length 1,4 mm. Mesonotum shiny dark blue-black; yellow micropubescence on antero-lateral parts. Dorsal bristles: 1 presutural, 1 supra-alar, 1 postalar, all fine black. Scutellum with 2 well-developed marginal bristles. Lateral aspect of thorax silver pruinose except for a large, shiny, bare area which includes parts of the mesopleuron and most of the sternopleuron. Mesepimeral setae long, shiny yellow. Metanotum silver pruinose with a pair of stout, black bristles and a group of fine, shiny setae situated on each callosity. Legs: parts of coxa, base of femur and most of tibia yellow-brown, remaining parts dark red-brown. Wings: Length 2,9 mm.

Abdomen: Terga dark red-brown to black, shiny, punctate, covered with fine shiny yellow setae. Sterna similar but red-brown and not markedly punctate. ♂ genitalia as Figs 10–11.

Paratypes: 9 ♂ 5 ♀ defective, similar to holotype. ♀ mystax composed of a group of normally developed, black and yellowish bristles flanked on either side by a few narrowish dorsoventrally flattened golden setae.

Material examined: LESOTHO: 2 ♂, holotype and paratype, 1 defective paratype, Blue Mountain Pass, Makhalong Valley, Maloti Mountain, 2 150–2 525 m, 12–14.i.1963, B. & P. Stuckenberg (NM, AM); 2 ♂ paratypes, Jordan Valley near Likhahleng Pass, 6.i.1954, L. Bevis (DMAG); 2 ♂ paratypes, Nr Rafanyane, 6 800 ft, 10.i.1955, L. Bevis (DMAG); 3 ♂ paratypes, Little Bokong R., 5.i.1947, L. Bevis (DMAG); 1 ♂ paratype, Lehaha La Sekhonyana, 29.xii.1946, L. Bevis (DMAG); 1 ♂ 2 ♀ paratypes, Giant's Castle, 27.ii.1939 (2 ♀) 25.ii.1939 (1 ♂), L. Bevis (DMAG). SOUTH AFRICA: *Cape Province:* 1 ♂ 1 ♀ paratypes, Naudesnek Summit *ca.* 15 km E. Rhodes, 8–9.i.1979, J. Londt & B. Stuckenberg, Grassland and stream edges (NM). Natal Museum type number NM 2547.

Remarks: Though similar to *argenteoviridis* this species differs in the colour of the mystax and, more importantly, in the male genitalia. It should be noted that Oldroyd recorded the Maloti Mountain material under *Loewinella nigripes* but there is no doubt that he made a mistaken identification. I have not seen the specimens he lists from Barkly East district, Naudesnek, but as two of my specimens of *montanus* were collected at this locality it is possible that he made another mistake.

Loewinella Hermann, 1912

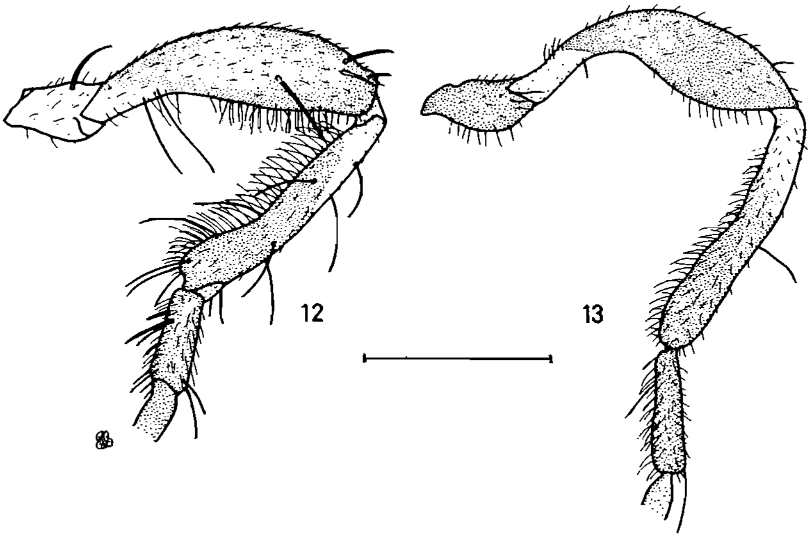
Lowinella Hermann, 1912: 108; Hull, 1962: 402–3.
Loewinella emended spelling accepted by the ICZN Code, Articles 27, 32c. Genotype: *Atomosia virescens* Loew, 1871, by original designation.

Oldroyd (1980) lists three species of *Loewinella* from the Afrotropical Region and I can add a further three species. Apart from these there are two Palaearctic species known to me, *L. virescens* Loew and *L. nitidicollis* Lehr, and a new Oriental species here described.

Key to all known species of *Loewinella*

1 Mystax mostly black; abdominal terga with sparse longish reddish setae medially (Palaearctic—U.S.S.R.) .... **nitidicollis** Lehr
– Mystax mostly white with at most 2 or 3 black setae; abdomen without longish setae 2
2 Ocellar bristles pale yellowish 3
– Ocellar bristles dark red-brown to black 5
3 Femora uniform yellowish; discal bristles on terga blackish; ♂ genitalia as Figs 14–15 (Afrotropical—Niger) .... **aphaea** Séguy
– Femora with at least upper parts dark red-brown; discal bristles on terga pale yellowish 4

4 Hind femora largely dark red-brown and slightly arcuate in ♂ (Fig. 12); ♂ genitalia as Figs 24–25 (Oriental—Pakistan) .... **lehri** sp. n.
– Hind femora not arcuate in ♂, mostly orange but dorsal parts dark red-brown; ♂ genitalia as Figs 28–29 (Palaearctic—Europe. U.S.S.R., ? China) .... **virescens** (Loew)
5 Pteropleuron with a large area shiny and lacking pruinescence 6
– Pteropleuron fairly uniformly pruinose and with a dull appearance 8
6 Femora uniform blackish; ♂ genitalia as Figs 26–27 (Afrotropical—East & southern Africa) .... **nigripes** Engel
– Femora uniform yellow 7
7 ♂ genitalia as Figs 18–19 (Afrotropical—Nigeria) .... **deemingi** sp. n.
– ♂ genitalia as Figs 20–21 (Afrotropical—Ivory Coast) ..... **eburacta** sp. n.
8 Femora uniform brown-yellow and not arcuate in ♂; vertex uniformly pruinose; ♂ genitalia as Figs 22–23 (Afrotropical—Namibia).... **flavipes** sp. n.
– Femora mainly dark red-brown and strongly arcuate in ♂ (Fig. 13); vertex with a shiny area between antennal bases and ocellarium; ♂ genitalia as Figs 16–17 (Afrotropical—Zaïre).......................... **arcuata** (Curran)



Figs 12–13. *Loewinella* species, hind leg. 12. *L. lehri* sp. n. (Holotype—Quetta, Pakistan). 13. *L. arcuata* (Curran) (Paratype—Stanleyville, Zaïre).

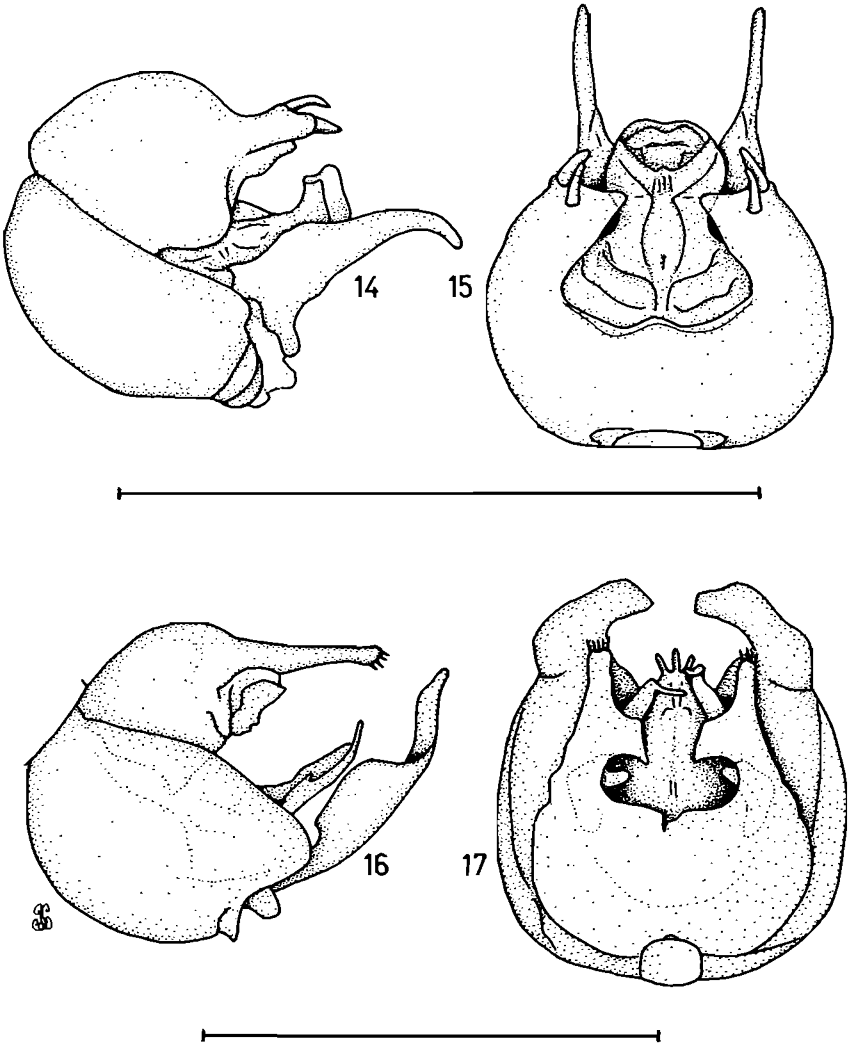
Loewinella aphaea Séguy 1950 Figs 14–15

Loewinella aphaea Séguy, 1950: 274; Oldroyd, 1980: 349.
Löwinella aphoea; Hull, 1962: 404 (misspelling).

Redescription: Based on the unique ♂ holotype.

Head: Antennae dark red-brown; relative lengths of segments—3 > 1 > 2 > 4; segment one with white bristles; segment two with black bristles; all setae tiny blackish. Segment three dull silver-gold pruinose. Microsegment cone-shaped with tiny, shiny, white setae. Frons: Eye : frons width ratio = 1,9 mm; dull silver pruinose. Mystax white, upper frons with white setae and a pair of long, white, downcurved bristles. Vertex uniform gold-silver pruinose; a pair of moderately long, white, ocellar bristles. Occiput black with silver pruinescence; a row of 6 or 7 short, white bristles behind each eye. Rostrum short, dark red-brown.

Thorax: Length 1,6 mm. Mesonotum shiny blue-black, punctate, with fine, shiny, white setae over entire surface; anterior margin with a pair of weakly developed, anteriorly directed bristles. Dorsal bristles: acrostichals and dorsocentrals not clearly defined, 1 black presutural, 1 pale yellow supra-alar, 1 pale yellow postalar. Scutellum shiny blue-black, covered with fine, white setae; margin with a pair of poorly developed, whitish bristles. Pleura silver pruinose except for a



Figs 14–17. *Loewinella* species, male genitalia. 14–15. *L. aphaea* Séguy (Holotype—Dabaga, Niger). 16–17. *L. arcuata* (Curran) (Paratype—Stanleyville, Zaïre).

shiny bare area involving parts of the mesopleuron and sternopleuron; pteropleuron uniformly silver pruinose. Mesepimeral setae long, white. Hypopleural setae poorly developed with only a single, white seta evident. Metanotum silver pruinose with 2 stout bristles (1 white, 1 black) on each callosity. Legs entirely yellowish, tarsi slightly darker terminally; bristles and setae white except for a few on the tarsomeres which are black. Wings: length 3,7 mm; membrane slightly brownish tinged.

Abdomen: Terga shiny blackish, punctate, covered with tiny, pale (almost transparent) setae. Sterna yellow-brown, fine gold pruinose, not punctate, with sparse, pale yellowish setae. ♂ genitalia as Figs 14–15.

Material examined: NIGER: 1 ♂ holotype, Aïr Sud, Dabaga, 600 m, 13–15. viii.1947, IFAN 1947, L. Chopard & A. Villiers, (PM).

Loewinella arcuata (Curran, 1927) Figs 13, 16–17

Atractia arcuata Curran, 1927: 5–6; Hull, 1962: 379.
Loewinella arcuata; Oldroyd, 1970: 257, 1980: 348.

A distinctive species, well described by Curran, Oldroyd was correct in transferring it from *Atractia* (an entirely Neotropical genus) to *Loewinella*. The form of the hind femora (Fig. 13) of males and the male genitalia (Figs 16–17) are distinctive. Nothing is known of its habits.

Distribution: The type series was collected in ZAÏRE, Stanleyville, i–ii, i–iv.1915, 6.viii.1909, and is housed in the American Museum of Natural History (New York) except for a pair of paratypes kindly donated to the Natal Museum. Oldroyd (1970) records the species from other localities in Zaïre—Coquilhatville, 10.xi.1931; Eala, xi.1931–v.1932, 22.vii.1914, xi.1934; Stanleyville, ii–iii.1928. These specimens are in the Koninklijk Museum voor Midden-Afrika, Tervuren.

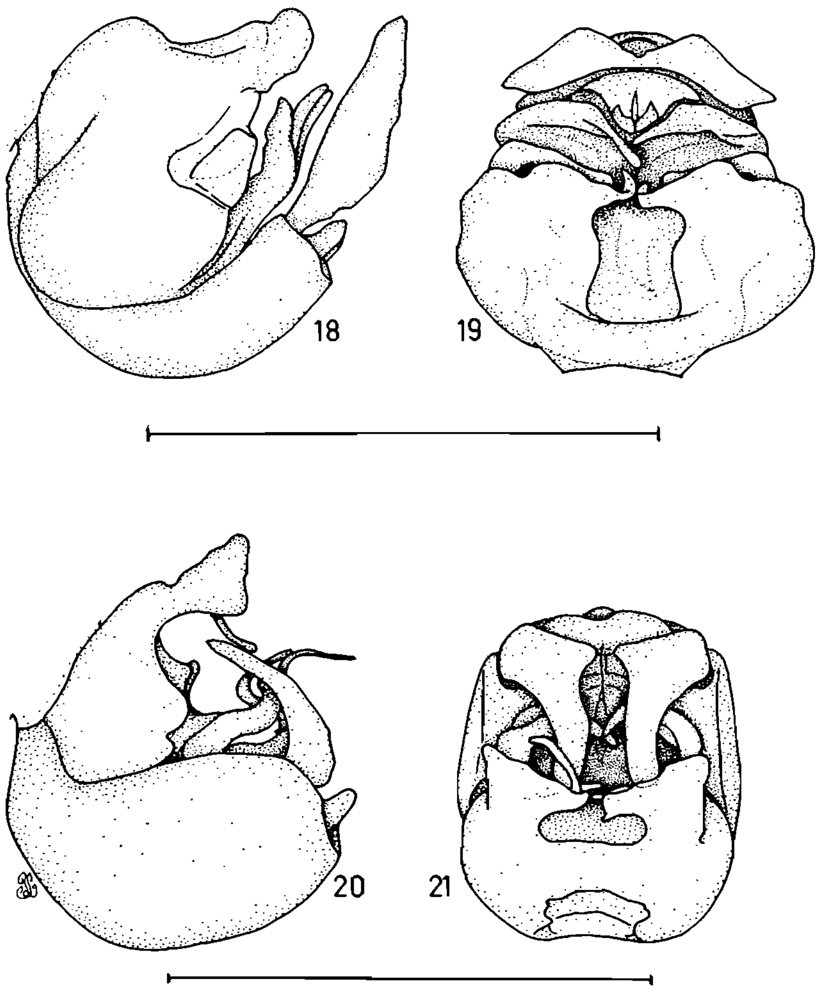
Loewinella deemingi sp. n. Figs 18–19

Derivation: Named after Mr J. C. Deeming, in recognition of his excellent insect collecting activities in Nigeria.

Description: Based primarily on ♂ holotype.

Head: Antenna dark red-brown; setae on segments one and two dark red-brown; relative lengths of segments—$3 > 1 > 2 > 4$. Frons: narrow (eye : width of frons ratio = 2,7); silver pruinose. Mystax composed of thin, shiny, almost transparent white bristles; upper frons with a pair of similar bristles and a number of smaller setae. Vertex dull silver-gold pruinose except for a shiny bare strip between antennal bases and ocellarium; a shiny silver pruinose spot present behind ocellarium; a pair of ocellar setae shortish, thin, black. Occiput: silver pruinose with 4 short black setae behind each eye. Rostrum short, dark red-brown.

Thorax: length 1,6 mm. Mesonotum shiny blue-black, punctate, covered with small, yellowish setae; a pair of black bristles on anterior margin. Dorsal bristles: acrostichals and dorsocentrals not evident, 1 presutural, 1 supra-alar, 1 postalar, all black. Scutellum colour and setation as mesonotum; a pair of fine black marginal bristles. Pleura silver pruinose with a shiny area involving mesopleuron,



Figs 18–21. *Loewinella* species, male genitalia. 18–19. *L. deemingi* sp. n. (Holotype—Samaru, Nigeria). 20–21. *L. eburacta* sp. n. (Holotype—Bouaké, Ivory Coast).

sternopleuron and anterior half of pteropleuron. Mesepimeral setae longish, pale yellow. Hypopleural setae poorly developed with only 2, pale yellow-white setae evident. Metanotum silver pruinose with 2 well-developed, black bristles on each callosity. Legs: Femora and tibiae yellow except for hind tibiae which are largely dark red-brown; tarsi brownish yellow with terminal tarsomeres, especially those of hind legs, darker brown. Bristles and setae mostly white but a number of black bristles and setae are present on all segments. Wings: length 4,7 mm; venation unremarkable; membrane with slight grey appearance due to the presence of black microtrichia.

Abdomen: Terga blackish, punctate, covered with fine, yellow setae; each tergum with a clear white discal bristle and a tuft of white setae on anterolateral corners.

Sterna yellow-brown with fine, yellow setae (a few black ones), not obviously punctate. ♂ genitalia as Figs 18–19.

Paratype: 1 ♀, similar to holotype. Mystax has a pair of black bristles. Discal bristles of terga sometimes black (especially posterior ones).

Material examined: NIGERIA: 1 ♂ holotype, N. Nigeria, Zaria, Samaru, 26.vi.1972, J. C. Deeming (BM); 1 ♀ paratype, same data but 2.vii.1972 (BM).

Loewinella eburacta sp. n. Figs 20–21

Derivation: L. *Ebur* = ivory; *acta* = sea-shore, coast. Named after the country of Ivory Coast where the types were collected.

Description: Based on ♂ holotype but supplemented with information taken from paratypes.

Head: Antenna dark red-brown; relative lengths of segments—3>1>2>4. Segments one and two with black bristles and setae. Frons fairly narrow (eye : frons width ratio = 2,2); silver pruinose. Mystax white except for a pair of black setae centrally (some paratypes have more black setae); upper frons with white, downcurved bristles and small, white setae. Vertex black with fine silver-gold pruinescence except for a narrow strip joining antennal bases and ocellarium which is shiny bare; a shiny silver pruinose patch immediately behind ocellarium; 2 thin, moderately long, black, ocellar bristles. Occiput black with silver pruinescence along eye margins; a row of 4 short, black bristles behind each eye. Rostrum short, dark red-brown.

Thorax: Length 1,4 mm. Mesonotum shiny blackish, punctate, covered with moderately long white setae; a pair of black bristles on anterior margin. Dorsal bristles: acrostichials and dorsocentrals not obvious, 1 black presutural, 1 black supra-alar, 1 poorly developed yellowish postalar. Scutellum shiny black, covered with fine, white setae; a pair of fine, longish, black marginal bristles. Pleura silver pruinose with a shiny area involving parts of the mesopleuron and almost the entire pteropleuron. Mesepimeral setae long, white. Hypopleural setae poorly developed with only 2 white setae evident. Metanotum silver pruinose with 2 stout black bristles on each callosity. Legs: femora and tibiae yellow except for hind tibiae which are largely dark red-brown; tarsi brownish except hind tarsi which are dark red-brown. Wings: Length 3,9 mm; venation unremarkable.

Abdomen: Terga shiny blue-black, punctate, covered with fine, white setae; each tergum with a well-developed white discal bristle (♀ has dark brown or black discal bristles) and a cluster of white setae on anterolateral corners. Sterna pale yellow-brown, dull gold pruinose, with few, yellow-white setae. ♂ genitalia as Figs 20–21.

Paratypes: 4 ♀, similar to holotype.

Material examined: IVORY COAST: 1 ♂ 1 ♀ holotype and paratype, Bouaké, F.—Foro, 24.vi.1974, G. Couturier, Piége colore transect B, (PM); 3 ♀ paratypes, Savam arboree, Foro-bouaké, 4.vii.1974, G. Couturier, O.R.S.T.O.M., (PM & NM). Natal Museum type number NM 2548.

Loewinella flavipes sp. n. Figs 22–23

Derivation: L. *Flavus* = yellow; *pes* = a foot. Refers to the yellow legs possessed by this species.

Description: Based primarily on ♂ holotype but supplemented with information taken from paratypes.

Head: Antennae black; relative lengths of segments—3 > 1 > 2 > 4; segments one and two with black setae, segments three and four fine gold pruinose with fine microsetae; three with a small bristle at the base of microsegment (segment four); segment four short and cone-shaped. Frons moderately narrow (eye : frons width ratio = 2,3); silver pruinose. Mystax composed of silver setae on epistomal margin and two, silver, downcurved setae in upper half of frons. Epistomal setae appear very slightly dorsoventrally flattened (but not nearly approaching the condition found in *Goneccalypsis*). Vertex black, silver-gold pruinose; a patch of silver pruinescence behind ocellarium; two longish, black ocellar setae. Occiput black with silver pruinescence especially adjacent to eye margins; about 7 black stout bristles behind each eye. Rostrum short dark red-brown.

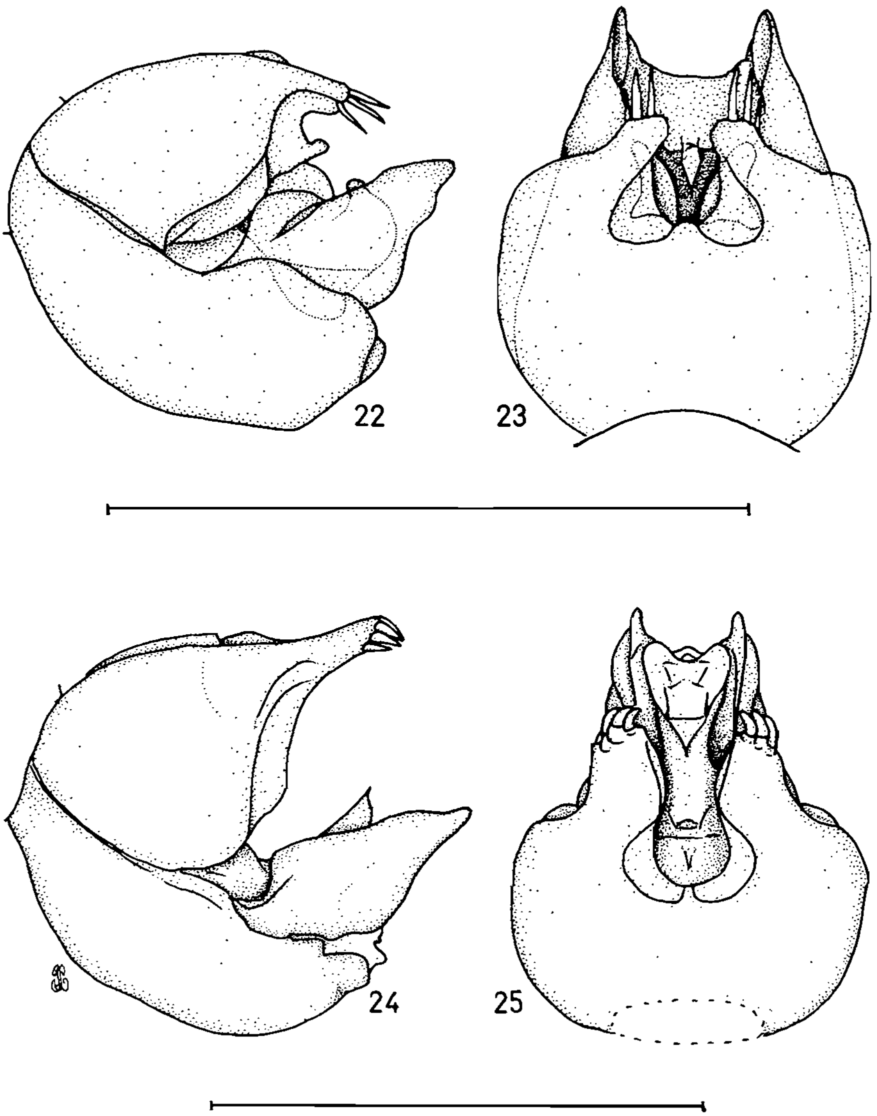
Thorax: Length 1,5 mm. Mesonotum shiny black, uniformly punctate, a fine yellow seta arising from each punctation. Dorsal bristles: acrostichals and dorsocentrals not evident, 1 presutural, 1 supra-alar, 1 postalar, fine black, except postalar, which may be yellowish. Scutellum shiny black, uniformly punctate like mesonotum, two weak, black marginal setae. Pleura silver pruinose, except for a shiny, bare area involving mesopleuron and sternopleuron; pteropleuron uniformly pruinose. Mesepimeral setae long, fan-like, yellow. Hypopleural setae weakly developed. Metanotum silver pruinose with a group of three or four stout bristles (usually black but one or two may be brown) on each callosity. Legs, including coxae, uniform pale yellow-brown, tibiae and tarsi somewhat darker; bristles and setae mainly yellowish (a few black on tarsi). Wings: length 3,8 mm; venation unremarkable.

Abdomen: Terga shiny blue-black, uniformly punctate like mesonotum. Sterna yellow-brown, gold pruinose, not punctate. ♂ genitalia as Figs 22–23.

Paratypes: 3 ♂ 7 ♀ listed below. Similar to holotype. ♀ mystax variable composed of black and silver-white setae. ♀ Eye : frons width ratio less than ♂ (ie. 1,7).

Material examined: NAMIBIA: 1 ♂ holotype 5 ♀ paratypes, Cayimaeis (= Chameis—27°51'S: 15°43'E), Museum expedition, iii.1925; 1 ♀ paratype, Zesfontein, Museum expedition, ii.1925; 3 ♂ 1 ♀ paratypes, Hoarusib Otshu, Museum expedition, iii.1926. Holotype and paratypes housed in South African Museum (SAM) except for 1 ♂ 1 ♀ paratypes, kindly donated to the NM (NM 2549).

Remarks: Most of the type specimens have broken antennae and the legs are set close to the thorax making it difficult to see the pleura clearly. The uniform yellow colour of the legs is an excellent field and key character while the male genitalia show obvious differences from the other illustrated species.



Figs 22–25. *Loewinella* species, male genitalia. 22–23. *L. flavipes* sp. n. (Holotype—Chameis, Namibia). 24–25. *L. lehri* sp. n. (Holotype—Quetta, Pakistan).

Loewinella lehri sp. n. Figs 12, 24–25

Derivation: Named after Dr P. A. Lehr in recognition of his good work on Palaearctic Asilidae.

Description: Based on unique ♂ holotype.

Head: Antennae broken off. Frons fairly broad (eye : frons width ratio = 1,6 mm); silver pruinose. Mystax and setae on upper frons white. Vertex: blackish, uniform silver-gold pruinose; a pair of long, yellowish ocellar bristles. Occiput: uniform gold-silver pruinose; a row of 6 or 7 short bristles behind each eye (some black, some yellow). Rostrum short, dark red-brown.

Thorax: Length 1,7 mm. Mesonotum shiny blue-black, finely punctate, covered with fine, pale yellow-white setae. Dorsal bristles: tiny, white acrostichals present, 1 black presutural, 1 black supra-alar, 1 pale yellow postalar. Scutellum shiny blue-black, covered with fine, white setae; marginal bristles apparently absent. Pleura silver pruinose except for a shiny, bare band occupying parts of the mesopleuron and sternopleuron; pteropleuron mostly pruinose, but lower margin very narrowly bare. Mesepimeral setae long, white, well developed. Hypopleural setae sparse (only 2) poorly developed, white. Metanotum silver pruinose with 2 short black bristles on each callosity. Legs: Femora slightly arcuate (Fig. 12) dark red-brown with yellow apices; tibiae red-brown except for upper proximal parts which are yellowish. Tarsi uniform dark-brown. Bristles and setae white except for a few black ones on ventral parts of tarsi. Wings 4,0 mm; membrane with a slight yellowish tinge.

Abdomen: Terga shiny blue-black, punctate, covered with tiny shiny white setae. Sterna shiny dark-brown, apunctate. ♂ genitalia as in Figs 24–25.

Material examined: PAKISTAN: 1 ♂ holotype, Quetta, N.W. India, v.1902, G. G. Nurse (BM).

Loewinella nigripes Engel, 1929 Figs 4–5, 26–27

Loewinella virescens var. *nigripes* Engel, 1929: 161
Loewinella nigripes; Oldroyd, 1974: 132, 1980: 349.

Originally described as a variety of the Palaearctic species, *L. virescens* Hermann, Oldroyd (1974) was, I believe, correct to give this taxon *nigripes* full specific status. I here give illustrations of the head (Fig. 4), antenna (Fig. 5) and male genitalia (Figs 26–27) for comparison with other species. The single female recorded from Madagascar is of interest. This specimen is almost identical to other females of *nigripes* from the African mainland. It does, however, possess a completely pruinose pteropleuron and the genitalia do not appear to conform to those of females from Africa. I consider, at present, that this specimen should be identified as *L. nigripes*, but the discovery of male specimens from Madagascar may eventually prove it to be another, as yet undescribed, species.

Distribution: Originally described from ZIMBABWE, Sawmills, 2.ii.1923, 27.xii.1923, the species was recorded by Oldroyd (1974) from various other localities. As has already been pointed out, some of his material was not correctly identified, and as all the material studied by him is in the Natal Museum I propose to relist the localities according to my identifications. MOZAMBIQUE, 7 ♂ 3 ♀, Luabo, i.1956 (NM). SOUTH AFRICA: *Natal:* 1 ♂ 1 ♀, Ndumu Reserve, 1–10.xii.1963 (NM); 1 ♂ 1 ♀, Cecil Mack Pass, Ingwavuma district, 27.ii.1971 (NM); 1 ♂ 1 ♀, M'fongosi, xii–ii.1935 (SAM); 1 defective, M'fongosi, iii.1917 (SAM); 2 ♀, M'fongosi, No date (SAM). *Transvaal:* 1 ♂, Kruger National Park, Sabie River, 41 km E. Skukuza, 4.i.1974 (NM); Kruger National Park, Letaba, 3–6.xii.1972 (NM). ZIMBABWE: 1 ♀, Sawmills, 26.xii.1923 (SAM). MADAGASCAR: 1 ♀, Ranohira, 860 M, 26.i.–4.ii.1958 (NM).

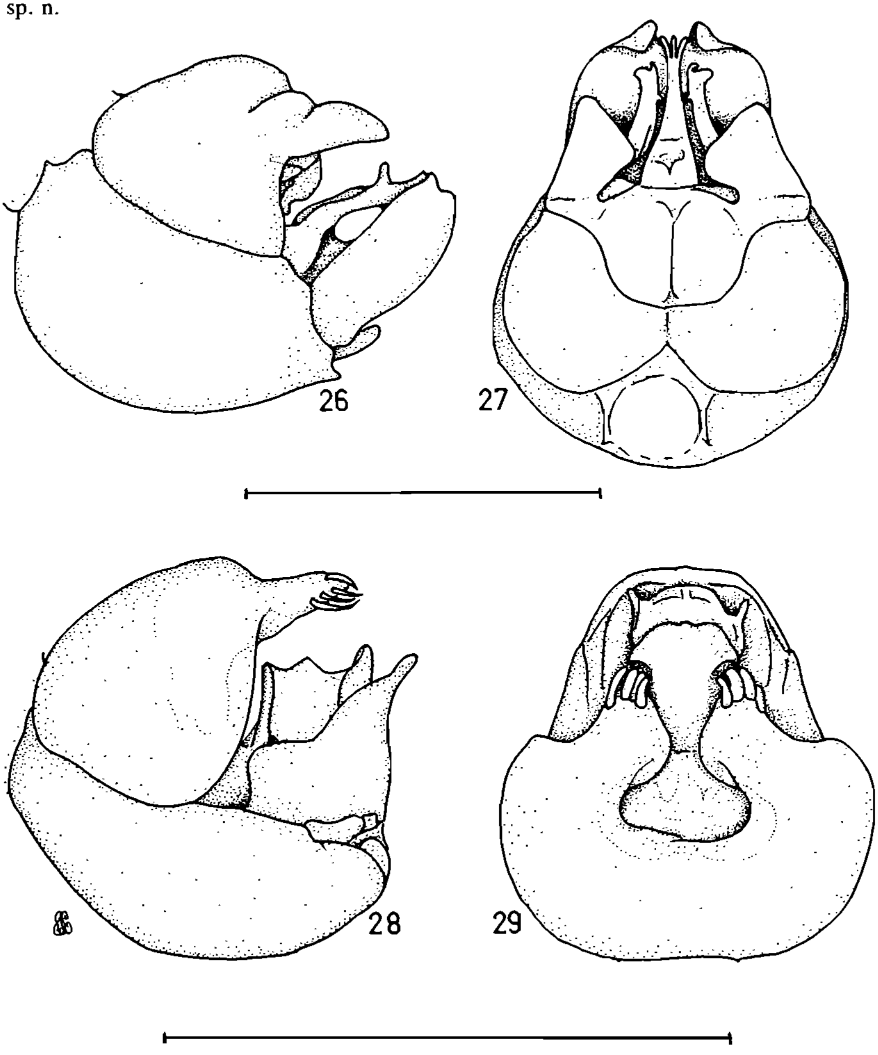
Loewinella nitidicollis Lehr, 1958

Loewinella nitidicollis Lehr, 1958: 754.

Lehr (1958) gives a very adequate description of this species. It is a pity that his illustration of the male genitalia is poor, as it makes comparisons with the species described in this paper almost impossible. It is fortunate that Lehr had studied specimens of *L. virescens* and provides the following key for the separation of the two species.

1(2) Setae and hairs of face white. Mesotergum densely speckled, with the exception of a narrow zone along the middle region. Long, delicate hairs on the upper parts of the abdominal tergites absent .... L. virescens Lw.

2(1) Setae and hairs of face black. Anterior part of mesotergum with a mirror-like lustre. Usually on the median parts of the abdominal tergites are delicate, sparse, long hairs .. L. nitidicollis Lehr, sp. n.



Figs 26–29. *Loewinella* species, male genitalia. 26–27. *L. nigripes* Engel (Luabo, Mozambique). 28–29. *L. virescens* (Loew) (Ninghia, ? China).

Lehr's reference to a mirror-like lustre of the mesonotum suggests that he may have had a species of *Goneccalypsis* rather than *Loewinella*. I shall, however, retain *nitidicollis* as a valid *Loewinella* on the basis that he does not describe the mystax as possessing scale-like bristles, and he illustrates the male genitalia as having what appear to be longish upturned styli similar to those found in *Loewinella* and not in *Goneccalypsis*. Lehr mentions the presence of 'tufts of sparse red hairs . . . along the median line of the [abdominal] tergites'. He also mentions these setae in his key (above). As I have not seen any *Loewinella* which possesses such setae I have used this feature to separate *nitidicollis* from all other *Loewinella* in my key.

As Lehr's paper is in Russian, and as little is known about the habits of *Loewinella* species in general, I am here presenting a translation of his notes on the distribution and habits of the species.

'*Distribution:* Kazakhstan: Alma-Ata (Vernay), 1907; 2 ♀ (Shnitnikov); 16.v., 5 ♂, 1 ♀, from them the holotype ♂ and allotype ♀ (Lehr); 29.v.1953, 1 ♂, 1 ♀ (Lehr); 28.vi.1954, 1 ♂ (Lehr).

All collections of the author were made on rock benches (piedmont) of Zailysky Ala-Tam in the neighbourhood of Alma-Ata. They are inhabitants of thick grass. They hunt at a height of 10–25 cm from the ground, seldom higher. The flight is slow and noiseless. Copulating pairs sit on the underside of horizontal blades of grass in a straight line; when disturbed they fall into the grass, where they crawl about awkwardly.'

Loewinella virescens (Loew, 1871) Figs 28–29

Atomosia virescens Loew, 1871:
Löwinella virescens; Hermann, 1912: 104; Hull, 1962: 402–4.
Loewinella virescens; Lehr, 1958: 753.

Redescription: Based on single ♂ listed below.

Head: Antenna (both broken off beyond segment two) dark red-brown; segment one with a large white bristle ventrally and tiny black setae dorsally; segment two with dark red-brown bristles and setae dorsally and ventrally. Frons fairly broad (eye : frons width ratio = 1,7); silver pruinose. Mystax shiny white; upper frons with a pair of long, downcurved, white setae and a few other short, white setae. Vertex: black, uniformly silver-gold pruinose; a pair of long, yellowish ocellar bristles. Occiput: black, gold-silver pruinose; a row of 8 or 9 short black bristles behind each eye. Rostrum short, dark red-brown.

Thorax: Length 1,8 mm. Mesonotum shiny black with fine, shiny white setae over entire surface. Anterior margin with a pair of pale yellow, forwardly directed, weakly developed bristles. Dorsal bristles: acrostichals not clearly defined; 1 presutural (broken off), 1 black supra-alar, 1 yellow postalar. Scutellum shiny blue-black, covered with tiny, white, shiny setae and with a pair of black marginal bristles. Pleura gold-silver pruinose except for a shiny area involving mesopleuron and sternopleuron; pteropleuron uniformly pruinose. Mesepimeral setae long, shiny, pale yellow. Hypopleural setae poorly developed with only a single, white seta evident. Metanotum gold-silver pruinose with a group of three or four stout black bristles (one or two may be yellowish) on each callosity. Legs orange but with upper parts of femora red-brown; tarsomeres a little darker than other segments; all setae and bristles white. Wings: length 3,8 mm; venation unremarkable; membrane tinged slight yellowish by microtrichia.

Abdomen: Terga blue-black, shiny, punctate, covered with fine shiny white setae. Sterna dark brown, shiny, apunctate, with sparse, white setae. ♂ genitalia as Figs 28–29. Female not available at time of description.

Material examined: ? CHINA: 1 ♂, Ninghia, 20.vi.1919, Licent (NM). This specimen, kindly donated to the Natal Museum, was one of a short series housed in the British Museum and identified by Oldroyd. The locality Ninghia is not listed in any of the gazetteers available to me but as many other place names beginning with 'Ning . . .' are to be found in China, I must assume that Ninghia is in China. Lehr (1958) indicates that the species has a very wide distribution and so it is probable that the specimen available to me is indeed conspecific with Loew's type.

Remarks: Lehr (1958) recorded *virescens* in the fauna of the U.S.S.R. Concerning its distribution and habits Lehr writes:

> 'Sarepta (Engel, 1930); south-east European part of the U.S.S.R. (Shtakel'berg, 1933). In the material of the Zool. Inst. and in our collections are more than 150 specimens from Predkavkaze, the Astrakhan region, the western and southern areas of Kazahkstan and from all the republics of Central Asia. It flies in June–July. In south-eastern Kazakhstan it has been met with on the bank of the river Ili in dense thickets of saltbush (*Atriplex*), milk-wort (*Euphorbia*), licorice (*Glycyrrhiza glabra*), chingilya; on grasses beneath the canopy of the Tugai Forest; in thickets of reeds. It keeps to the damper parts of the shore.'

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